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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/920,981	08/02/2001	Hassan Taheri	39000	6122

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EXAMINER

KERNS, KEVIN P

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/920,981

**Applicant(s)**

TAHERI ET AL.

**Examiner**

Kevin P. Kerns

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2004 and 16 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-34 is/are pending in the application.
- 4a) Of the above claim(s) 12-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-11, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2001 and 20 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/20/04, 4/11/05</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-6, 8-11, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE 29 29 300.

DE 29 29 300 teaches a flow reactor for heterogeneous catalyst reactions that has a plurality of conduits that have outer surfaces arranged to contact a heat transfer medium. The reactor includes inlet and outlet manifolds for the flow channels and a shell encloses the reactor to form inlets and outlets for the heat transfer medium. The channels are comprised of a plurality of zones (e.g. three zones in Figures 2 and 3; and

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four zones in Figure 1), with these zones have a uniform cross-section throughout their length. DE 29 29 300 shows that three or four zones may be used for a channel and teaches that the channels are sized to optimize heat transfer for exothermic or endothermic reactions. Downstream zones of the channels are sized differently and may be sized to have a larger cross-section and volume. In the example of Figure 2, DE 29 29 300 teaches that the total length of the zones may be 8 m. (DE 29 29 300; abstract; Figures 1-3; and pages 2-7 of translated copy provided by applicants).

However, while DE 29 29 300 teaches a relationship between the channel diameter and the flow per unit time through that pipe, it does not specifically teach that the diameter of a channel zone cubed is equal to the volume of that zone multiplied by a factor.

In Figures 1 and 3, DE 29 29 300 shows that downstream zones of channels may be of larger diameter than the previous zones. However, DE 29 29 300 does not teach any dimension for these examples. DE 29 29 300 gives dimensions for the example in Figure 2 where a second zone has a larger diameter than the first and third zones. In comparing the relationship of zone diameter cubed to the volume of the zone for the first and second zones, where the second zone has a larger diameter than the first, the second zone has a larger factor than the first and both zones have a factor that is between 0.015 and 0.100. (DE 29 29 300; abstract; Figures 1-3; and pages 2-7 of translated copy provided by applicants).

It would have been obvious to one of ordinary skill in the art at the time that the applicants' invention was made that the factor for the final zone, which has the largest

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diameter in Figure 1, could have a factor larger than the previous two zones and that this factor could be between 0.015 and 0.100. One would have been motivated to design zone dimensions to properly regulate heat transfer, provide an optimal temperature gradient, and provide larger diameter zones where less heat needs to be removed, as taught by DE 29 29 300.

### ***Response to Arguments***

4. The examiner acknowledges the applicants' amendment/remarks and corrected/replacement drawings (received by the USPTO on December 20, 2004 and March 16, 2005), and two supplemental Information Disclosure Statements (received by the USPTO on December 20, 2004 and April 11, 2005). Both of the Information Disclosures Statements have been considered and initialed, and copies of these pages are enclosed with this Office Action. The amendments and drawings overcome prior objections to the drawings, specification, and claims. The applicants have cancelled claim 7, while adding new claims 33 and 34. Claims 12-32 remain withdrawn from further consideration as being drawn to non-elected inventions. Claims 1-6, 8-11, 33, and 34 are currently under consideration in the application.

5. Applicants' arguments filed December 20, 2004 have been fully considered but they are not persuasive.

With regard to the applicants' remarks/arguments on pages 16-18 of the remarks section, the applicants are referred to the newly underlined portions of paragraph 3, as

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the prior rejections under 35 USC 102(b) are now replaced with rejection of all claims under 35 USC 103(a) due to incorporation of cancelled claim 7 (previously rejected under 35 USC 103(a)) into independent claim 1. The features of claim 1, as amended, remain obvious to one of ordinary skill in the art due to an obvious range of geometric factors that would be selected by routine experimentation to optimize the operation of the reactor (e.g. heat transfer, efficiency etc.). In addition, the applicants have not provided convincing arguments regarding unexpected results in view of the teachings of DE 29 29 300, and an affidavit/declaration is suggested if such unexpected results exist. Furthermore, a *prima facie* case of obviousness exists per MPEP 2144.05 as follows:

“In the case where the claimed ranges ‘overlap or lie inside ranges disclosed by the prior art’, a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)...Similarly, a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985)”.

“A prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness.” *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). The CAFC stated: “Selecting a narrow range from within a **somewhat** broader range disclosed in a prior art reference is no less obvious than identifying a range that simply overlaps a disclosed range. In fact, when, as here, the claimed ranges are completely

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encompassed by the prior art, the conclusion is even more compelling than in cases of mere overlap. The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages. ... (A) prior art reference that discloses a range encompassing a **somewhat** narrower claimed range is sufficient to establish a *prima facie* case of obviousness."

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571)

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272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 5/1/05*  
Primary Examiner  
Art Unit 1725

KPK  
kpk  
May 1, 2005